Reconnaissance Biophysical Survey Report for the Gull Lake Project

Prepared for

GS Communities

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Prepared by

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Executive Summary

Management and Solutions in Environmental Science Inc. (MSES) was requested to conduct a reconnaissance-level survey and summary report for the Gull Lake Development Project (the Project). The Project is located on approximately 65 hectares in the NW ¼ 14-41-28 W4M, located east of Gull Lake, Alberta (Figure 1).

On 29 August 2014 a MSES senior Professional Biologist and MSES field assistant visually inspected the Project Area (PA) taking note of dominant vegetation types and wildlife presence (birds and mammals). The objectives of the reconnaissance-level survey were to gather general information on the biophysical resources of the subject lands and to provide guidance with respect to any additional biophysical studies that may be required in 2015 in support of future development plans.

Dominant vegetation communities in the PA included pasturelands and croplands. An open grassy field that appears to be ungrazed, was prominent within the northwest corner of the PA. Pasturelands occupied by cattle were present along the western edge of the PA while the eastern half of the PA was dominated by croplands and a newly excavated detention basin. A band of trees narrowly intersects the southeast corner of the property. A small, shallow depression near the northeast corner and a low-lying area near the northwest corner of the property may be ephemeral or temporary wetlands, though no water was present in either location at the time of the reconnaissance survey. A line of trees border a driveway and residence, which we understand is excluded from development of the project area. See site photographs from reconnaissance survey (Appendix A).

Although primarily used for crops and cattle, the PA appears to provide some habitat for birds and mammals. Depending on the frequency of water retention in the wetlands described above, amphibians may utilize the area in and around these wetlands. Wildlife tracks observed included Coyote (*Canis latrans*) and deer tracks, likely belonging to either White-Tailed (*Odocoileus virginianus*) or Mule Deer (*Odocoileus hemionus*). Fresh deer beds were also observed in the cropland. American Crows (*Corvus brachyrhynchos*), two Red-Tailed Hawks (*Buteo jamaicensis*), and two Savannah Sparrows (*Passerculus sandwichensis*) were observed on the PA. A woodpecker hole was observed in a standing, dead tree bordering the driveway leading to the residence. A few unidentified mounds, burrows and dens, likely from Northern Pocket Gophers (*Thomomys talpoides*) or Richardson's Ground Squirrels (*Spermophilus richardsonii*), were observed throughout the property and along the eastern fence line of the property.

Historical records indicate that there has been a single observation of a wildlife species of special management concern found within 1-2 kilometres (km) of the PA. The Purple Martin (*Progne subis*) is listed as 'Sensitive' with Alberta Environment and Sustainable Resource Development (AESRD). It is possible that Purple Martin may still occur within the vicinity of

the PA because their habitat can include forests, farms or urban settings (Airola and Williams 2008, Fisher and Acorn 1998, USDA Forest Service 2009, Wiggins 2005) which are common within this area.

Alberta Conservation Information Management System (ACIMS) has no record of occurrences of plant species within 1-2 km of the PA. To date, no occurrences have been recorded within the PA for any vegetation species of special management concern by the ACIMS. This does not necessarily mean that there are no species of special management concern on the property but could mean that that the PA has not yet been surveyed.

No Environmentally Significant Areas (ESA) were identified on or adjacent to the PA.

Given that the reconnaissance survey occurred outside of recommended survey times, we recommend conducting several detailed wildlife and vegetation surveys to inventory and assess current baseline conditions in support of any future development plans. These include:

- Vegetation Community Mapping (June)
- Wetland Surveys and Classification (June)
- Rare Plant Surveys (June and July)
- Breeding Bird Survey (June)
- Pellet Surveys (May/June)
- Amphibian Surveys (May/June).

All of the information gathered would be used to categorize and develop a description of baseline (current) conditions that will be used to predict potential environmental impacts as a result of any development project. Completion of these surveys, at the appropriate time of year, would enable the development proponent to demonstrate due diligence, environmental best management practices, and ensure that provincial and federal legislation regarding species of special management concern are not unknowingly violated.

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ACRONYM LIST

ACIMS	Alberta Conservation Information Management System
AESRD	Alberta Environment and Sustainable Resource Development
ESA	Environmentally Significant Areas
FWMIS	Fisheries and Wildlife Management Information System
km	kilometre
MSES	Management and Solutions in Environmental Science Inc.
NM	Northwest
PA	Project Area
the Project	Gull Lake Project
SARA	*Species at Risk Act*

1.0 Introduction

Management and Solutions in Environmental Science Inc. (MSES) was requested to conduct a reconnaissance survey and summary report for the proposed Gull Lake Project (the Project). The reconnaissance survey was conducted to gain a better understanding of the ecological resources in the Project Area (PA). The objectives of this summary report is to provide an overview of existing environmental elements found within the project site and provide recommendations for future environmental studies. Government databases were searched to determine if any species of special management concern could potentially occur in the PA.

2.0 Ecological Setting

The PA falls within the Central Parkland Natural Subregion of Alberta which is represented by an intensively cultivated area that shares characteristics with the forest and prairie natural regions that border the Parkland subregion. This subregion is the most densely populated region of Alberta because it includes either wholly or partly the cities of Edmonton, Red Deer and Calgary. It is also one of the most productive agricultural areas with cropland covering about 80% of the plains and 65% of hummocky uplands (Natural Regions Committee 2006).

The dominant landforms include undulating till plains and hummocky uplands. In the northern and eastern parts of the subregion, the habitat is mostly cultivated with a mosaic of trembling aspen (*Populus tremuloides*) and prairie vegetation on remnant native parkland areas. In the southern and eastern parts, the dominant vegetation is plains rough fescue prairie with clumps of aspen on more moist sites. Aspen forest is dominant in the northern and western parts of this subregion with grasslands restricted to drier areas (Natural Regions Committee 2006). Broad soil groups associated with grasslands include Black Chernozems, while the soils associated with aspen forests include Dark Gray Chernozems and Luvisols (Natural Regions Committee 2006).

Vegetation communities in this subregion include varying proportions of grassland to aspen forest stands to mixed wood. Grassland communities can include plains rough fescue (*Festuca hallii*), western porcupine grass (*Stipa curtiseta*) and northern wheat grass (*Agropyron dasystachyum*) with a variety of perennial herbs such as the prairie crocus (*Anemone patens*) (Natural Regions Committee 2006). Forested communities can include aspen with balsam poplar (*Populus balsamifera*) and white spruce (*Picea glauca*) in moister areas. Common species found in the understory include Saskatoon (*Amelanchier alnifolia*), prickly rose (*Rosa acicularis*), beaked hazelnut (*Corylus cornuta*) and a variety of forbs and grasses (Natural Regions Committee 2006).

Examples of some of the common wildlife species that may be found within aspen and willow habitats of this subregion include red-tailed hawk (*Buteo jamaicensis*), least flycatcher (*Empidonax*

minimus), yellow warbler (*Dendroica petechia*), white-tailed deer (*Odocoileus virginianus*), snowshoe hare (*Lepus americanus*), northern pocket gopher (*Thomomys talpoides*) and American porcupine (*Erethizon dorsatum*). Some species common in river valley forests and shrublands include the great-horned owl (*Bubo virginianus*), northern flicker (*Colaptes auratus*), white-throated sparrow (*Zonotrichia albicollis*) and red squirrel (*Tamiasciurus hudsonicus*). Common amphibian and reptile species found within this subregion include the boreal chorus frog (*Pseudacris maculata*), wood frog (*Rana sylvatica*), Canadian toad (*Bufo hemiophrys*) and the plains garter snake (*Thamnophis radix*).

2.1 Project Study Area

The Gull Lake Project is located on approximately 65 hectares of land east of Gull Lake, Alberta in the NW ¼ 14-41-28 W4M. The PA consists of gently rolling terrain and is largely dominated by pastureland and cropland. A band of trees narrowly intersects the southeast corner of the property (Figure 1). A residence, associated buildings and driveway are located in the west-central section of the property. Deciduous and coniferous tree species line the driveway and surround the residence, but it is our understanding that these buildings and associated vegetation are excluded from development of the PA.

Most of the landscape to the north, east, and south of the PA consists of open fields (e.g. agriculture, cattle) with some forested stands. The property is bordered by road 282 (gravel) and a Recreational Vehicle Resort to the west.

Figure 1 – Location of Project Area NW ¼ 14-41-28 W4M east of Gull Lake, Alberta

3.0 Methods

3.1 Reconnaissance Survey

On 29 August 2014 a MSES senior Professional Biologist and MSES field assistant visually inspected the PA taking note of dominant vegetation types and wildlife presence (birds and mammals). The presence/absence of wetlands or wet areas that could represent potential amphibian habitat was also noted.

3.2 Species of Special Management Concern

Federal and provincial government databases, such as the *Species at Risk Act* (SARA) Registry (Government of Canada 2012) and Alberta Environment and Sustainable Resource Development (AESRD) general status of wild species (Government of Alberta 2010), were searched to identify wildlife species that are potentially at risk in Alberta that may occur near the study site. MSES also obtained a listing of species of special concern from AESRD's Fisheries and Wildlife Management Information System (FWMIS) database within and around the study site (FWMIS 2014).

Spatial maps provided by the Alberta Conservation Information Management System (ACIMS) were searched for records of any occurrences of rare plants within the area (ACIMS 2014). ACIMS ranks species based on the number of occurrences globally and provincially and when available, other life history information.

4.0 Results

4.1 Reconnaissance Survey

Dominant vegetation communities in the PA included pasturelands and croplands. An open grassy field that appears to be ungrazed, was prominent within the northwest corner of the PA. Vegetation species noted in this field included goldenrod (*Solidago spp.*), clover (*Trifolium hybridum*), rush (*Juncus spp.*) yarrow (*Achillea spp.*), and thistle (*Cirsium spp.*). Pasturelands occupied by cattle were present along the western edge of the PA and a small group of approximately four mature poplar (*Populus spp.*) trees were noted within this area. An L-shaped mound of exposed unvegetated soil, approximately 150m long by 15m wide, ran along the northeastern corner of the property. The eastern half of the PA was dominated by croplands and a newly excavated detention basin. A band of trees narrowly intersects the southeast corner of the property and contained willow (*Salix spp.*) shrubs and poplar (*Populus spp.*) trees. A small, shallow depression near the northeast corner and a low-lying area near the northwest corner of the property may be ephemeral or temporary wetlands, though no water

was present in either location at the time of the reconnaissance survey. A line of trees border a driveway and residence, which we understand to be excluded from development of the PA. See site photographs from reconnaissance survey (Appendix A).

General observations of birds species noted in the PA include American Crows (*Corvus brachyrhynchos*), two Red-Tailed Hawks (*Buteo jamaicensis*), and two Savannah Sparrows (*Passerculus sandwichensis*). A woodpecker hole was observed in a standing, dead tree bordering the driveway leading to the residence.

Wildlife tracks observed included Coyote (*Canis latrans*) and deer tracks, likely belonging to either White-Tailed (*Odocoileus virginianus*) or Mule Deer (*Odocoileus hemionus*). Fresh deer beds were also observed in the cropland. A few unidentified mounds, burrows and dens, likely from Northern Pocket Gophers (*Thomomys talpoides*) or Richardson's Ground Squirrels (*Spermophilus richardsonii*), were observed throughout the property and along the eastern fence line of the property.

4.2 Species of Special Management Concern

There is a single record of a wildlife species of special management concern found within 1-2 km of the PA (FWMIS 2014). The Purple Martin (*Progne subis*) is listed as 'Sensitive' with Alberta Environment and Sustainable Resource Development (AESRD; Government of Alberta 2010). The habitat of the Purple Martin is common within the PA and includes forests, open fields including grasslands and agricultural areas, as well as urban settings (Fisher and Acorn 1998). Purple Martin typically nests in cavities of trees and human structures including nesting boxes (Airola and Williams 2008, USDA Forest Service 2009, Wiggins 2005). They may also use abandoned nests of raptors, ravens or magpies (Fisher and Acorn 1998). Nesting sites often have open air space and water nearby which offer abundant aerial insect prey (Airola and Williams 2008). Although no observations of purple martin have been recorded within the PA, this does not preclude the potential for such species to occur in the PA. The absence of records could indicate that very few surveys or inventories have been done in this area.

Several wildlife species listed under the AESRD general status of wild species and/or under the federal SARA Registry may find the ecological parameters of the PA suitable at some stage in their lifecycle. Some of these include (the SARA (2012) rating follows the AESRD (2010) rating in parentheses):

- Northern Leopard Frog (*Rana pipiens*) – At Risk (Endangered)
- Canadian Toad (*Bufo hemiophrys*) – May Be at Risk (Not at Risk)
- Plains Garter Snake (*Thamnophis elegans*) – Sensitive (No listing)
- Silver-haired bat (*Lasionycteris noctivagans*) – Sensitive (No listing)
- Hoary bat (*Lasiurus cinereus*) – Sensitive (No listing)

- Long-tailed weasel (*Mustela frenata*) – May Be at Risk (No listing)
- American badger (*Taxidea taxus*) – Sensitive (Endangered)
- Loggerhead Shrike (*Lanius ludovicianus*) – Sensitive (Threatened)
- Sprague's Pipit (*Anthus spragueii*) – Sensitive (Threatened)
- Peregrine Falcon (*Falco peregrinus*) – At Risk (Special Concern)
- Common Nighthawk (*Chordeiles minor*) – Sensitive (Threatened)
- Yellow Rail (*Coturnicops noveboracensis*) – Undetermined (Special Concern)
- Short-eared Owl (*Asio flammeus*) – May Be at Risk (Special Concern)
- Several shorebirds and songbirds are listed as being sensitive by AESRD

In order to adequately determine the likely presence or absence of these species, systematic wildlife surveys at the appropriate time of year should be conducted.

Alberta Conservation Information Management System (ACIMS) has no record of occurrences of plant species within 1-2 km of the PA. To date, no occurrences have been recorded within the PA for any vegetation species of special management concern by the ACIMS. However, this does not preclude the potential for such species to occur in this area. The absence of records could indicate that very few surveys or inventories have been done in this area. More timely and systematic surveys of particular areas of interest (i.e., wet areas) would be required in order to be more definitive of species presence or absence.

Rare vascular plant species are known to occur in a variety of habitats. No rare plant surveys were conducted to date for the PA. Spring and summer rare plant surveys (June and July) would be required to systematically assess the actual presence of plants considered endangered, threatened, or special concern or rare within the PA.

No Environmentally Significant Areas (ESA) were identified on or adjacent to the PA.

5.0 Recommendations

The following recommendations are made on the basis of the reconnaissance-level survey and our judgement as wildlife professionals. A Biophysical Impact Assessment (BIA) should be conducted for the PA to ensure that no provincial or federal legislation is unknowingly violated during construction activities. We recommend conducting the additional detailed wildlife and vegetation surveys to inventory and assess current baseline conditions, including:

1) Breeding Bird Survey (June)

Breeding bird surveys will document the presence/absence of species and provide information pertaining to wildlife species of special management concern to provincial and federal regulatory authorities. There are several songbird bird species of special

management concern that could potentially reside in the PA. Raptors may use the mature trees on the property for perches and the open grassy fields for hunting.

2) Describe and map vegetation community types (June)
Information collected from these surveys will be used to categorize landcover types based on plant species composition, wetland structure and disturbance. Vascular plant species will be identified using field guides and floras.

3) Conduct rare plant surveys at the appropriate time of year (June and July)
Rare plant surveys are best conducted in June with a second survey in late July or early August to capture presence/absence of early and late blooming rare plant species.

4) Pellet Group Survey (late May or early June)
This survey is an effective indicator of relative distribution and habitat use of ungulates, and sometimes can also provide information on other wildlife species (Neff 1968).

5) Amphibian Survey (late May or early June)
Late-night call surveys will be used to gather information on habitat use by amphibians and to determine presence / absence of amphibian species in the local study area. This survey will be conducted in late May or early June.

6) Wetland Assessment (June 2015)
Delineate and classify all wetlands according to Stewart and Kantrud (1971) or as required. Surveys for vegetation community types, rare plants, wildlife and amphibians described above will also focus on wetlands in the PA.

All of the information gathered during these detailed surveys would be used to categorize and develop a description of current baseline conditions that will be used to predict potential environmental impacts as a result of any development project. Carrying out systematic surveys for wildlife and vegetation could be conditions for any development approval or could result in specific conditions of approval being required by regulatory agencies (i.e., avoidance and preservation of certain plant species, maintenance of wetland setbacks, etc.). It is our understanding that these types of detailed surveys have also been requested by Lacombe County officials as requirements for approval of future development in that county.

Completion of these surveys, at the appropriate time of year, would enable the development proponent to demonstrate due diligence, environmental best practices, and ensure that provincial and federal legislation regarding species of special management concern are not unknowingly violated.

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Appendix A

Site Photographs from Reconnaissance Survey– Gull Lake Development

Northwest corner of PA, observed from western perimeter looking east. Open grassy field was prominent, appears ungrazed.

Ephemeral or temporary wetlands observed in low lying area near northwest corner of PA. No water was present at the time of the reconnaissance survey (29 August 2014).

Newly excavated detention basin surrounded by cropland, northeastern / central section of the PA.

Central section of PA, observed from northern perimeter looking south.

Exposed unvegetated soil along northern perimeter. Photo taken from northeast corner of PA looking west.

Ephemeral or temporary wetlands observed near the northeast corner of PA. No water was present at the time of the reconnaissance survey (29 August 2014).

Central section of PA, observed from the eastern perimeter looking west.

Eastern edge of PA, observed from southeast corner looking north: cropland.

Southeast corner of PA. Band of trees intersecting corner of the PA contained willow (*Salix spp.*) shrubs and poplar (*Populus spp.*).

Southern edge of the PA looking west: cropland in foreground, pastureland in background.

Southwestern section of PA, taken looking west: pastureland grazed by cattle. Recreational Vehicle Resort visible in distance.

Western perimeter of PA, observed from near center looking south. Road 282 visible on right.

Western edge of PA observed from northwest corner looking south. Open grassy field was prominent, appears ungrazed. Road 282 visible on right.